PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference C4203(C)/ps	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP 03/00283	International filing date *(day/month/year)* 13.01.2003	Priority date *(day/month/year)* 06.03.2002
International Patent Classification (IPC) or both national classification and IPC C08G63/00		
Applicant UNILEVER PLC		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
07.07.2003	01.04.2004
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Lauteschlaeger, S Telephone No. +49 89 2399-8303

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP 03/00283

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-21 as originally filed

Claims, Numbers

1-10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	5-10
	No:	Claims	1-4
Inventive step (IS)	Yes:	Claims	6-10
	No:	Claims	1-5
Industrial applicability (IA)	Yes:	Claims	1-10
	No:	Claims	

2. Citations and explanations

see separate sheet

In the IPER the following documents are referred to:
D1: GB-A-1547958
D2: WO-A-0006679
(cf. passages cited in the SR)

V. 1. Novelty

In D1 azetidinium-functional polyesters are disclosed (cf. D1, claims 5 (and 1) in combination with page 7, first full paragraph and page 6, lines 10-14 and lines 22 - 25).

The afore-mentioned polyesters are obtained by reacting poly(ether)ester prepolymers with diisocyanates, hydrolysing them to NH2-groups (thereby obtaining amine-substituted polyesters as intermediate products) and subsequently, treating the the afore-mentioned amine-substituted polyesters with epihalohydrin.

The claimed subject-matter represents a two-fold selection from the claims of D1.

It is, however, obvious from the whole content of the present application and the examples, that the term "polyester" is intended to encompass further structural elements such as polyetherunits. According to page 4, lines 21, 22 the polymer backbone contains "a plurality of ester groups" which means that further groups may be present in the polymer's backbone. Polyalkylene glycol units in the polymer's backbone are expressis verbis mentioned in the present description (e.g. page 6, paragraph 2 and examples).

As a consequence of the aforesaid polyetheresters which represent a preferred embodiment of D1 fall within the designation "polyester" as claimed (cf. e.g. D1, page 5, lines 36-40).

The claimed "polyesters" are thus anticipated by the disclosure on page 7, first full paragraph (polyesterethers) in combination with the cross-linkable or cationic groups disclosed in D1 (e.g. in claim 5)(= one-fold selection from the afore-mentioned disclosure).

The subject-matter of claim 1 and subclaims is thus anticipated by the afore-mentioned disclosure.

2. Inventive Step

Polyesters containing the structural features of those mentioned in D1 (even if rendered formally novel) would not be based on an inventive step. It was known to enhance biodegradability (by hydrolysis) by introducing ester groups into lipophilic

molecules (cf. D2, cited passages on page 2). The skilled person, starting from D1 and intending to prepare biodegradable polymers would thus select polymers containing hydrolytically labile groups, such as e.g. polyester groups.
Even though D2 is directed to surfactants it represents common technical knowledge of the skilled person that ester-groups are hydrolytically labile, their incorporation into a molecule's backbone thus rendering both surfactants and polymers biodegradable (by hydrolysis).
It can thus not reasonably be denied by a chemist that the afore-mentioned polyetheresters mentioned in D1 are degradable by hydrolysis (the rate of hydrolyis depending upon the period of time and temperature employed). It is noted that the claimed polyesters are only said to be biodegradable without any indication of degradation parameters (period of time or temperature).

The particular polyesters derived from **iminodiacarboxylic acids** (cf. claim 9) employed according to the present invention are, however, not disclosed in the prior art found in the Search Report.
D1 contains only a general remark that charged groups may constitute part of the polymeric backbone (D1, page 3, first full paragraph), without any indication as to how this can be realized and which type of the polymers mentioned in D1 should be modified.
Novelty and inventive step could thus be acknowledged for the afore-mentioned embodiment of the present application.